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AUTHOR	Smith, David C.
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ABSTRACT

Secondary school reform in Ontario is expected to produce an increase in enrollment. An estimated 4,500 new faculty will be needed to meet this increase. In addition, 5,500 new faculty will be needed to fill openings resulting from retirement. This report's major findings indicate that: 1) Faculty are the crucial factor in determining the quality of education and research contributed by universities; 2) A strong rise in demand for new faculty is expected through the first decade of this century, and this rise will create an enormous challenge and opportunity; 3) The university sector in Ontario has limited capacity to meet increased enrollment; 4) Improved graduate support is needed; 5) Higher demand for faculty parallels similar needs internationally, therefore hiring barriers should be decreased; 6) Three sets of factors affect faculty retention and recruitment efforts; and 7) Recommendations are made for sharing responsibility among stakeholders for meeting the challenge of higher enrollment in terms of faculty needed. Ten tables present enrollment and faculty hiring data. (HB)

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ED 446 471

"Will there be enough excellent profs?"

REPORT ON PROSPECTIVE DEMAND AND SUPPLY CONDITIONS FOR UNIVERSITY FACULTY IN ONTARIO

by

David C. Smith

U.S. DEPARTMENT OF EDUCATION
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It is a companion report to *"How will I know if there is quality?"* which examines quality indicators and quality enhancement in universities. Both reports are complementary to the 1999 report by PricewaterhouseCoopers for COU entitled *"Will there be room for me?"* which examined the expected large increase in student demand for university education in Ontario.

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Council of Ontario Univerisites
Conseil des universités de l'Ontario
180 Dundas Street West, Suite 1100, Toronto, Ontario M5G 1Z8
Phone: (416) 979-2165 Web Site: http://www.cou.on.ca

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SUMMARY AND CONCLUSIONS

"Will there be room for me?" is the title of a 1999 report by PriceWaterhouseCoopers (PWC) on the expected large increase in student demand for university education in Ontario over the next decade. The purpose of this report is to concentrate on a complementary question: *"Will there be enough excellent profs?"* It examines prospective demand and supply conditions for faculty over the next decade. An accompanying report examines the further question: *"How will I know if there is quality?"*

The following is a brief statement of major points summarized from each section of the report:

1. **Faculty are the crucial factor in determining the quality of education and research contributed by universities.**

Many factors affect the quality of university-based education and research – the learning environment, the abilities and motivation of students, and the physical infrastructure – but none exceeds the quality of faculty in importance. This conclusion does not detract from the important recent step the Ontario government has taken to contribute $660 million to expanding physical capacity in postsecondary institutions in anticipation of enrolment growth.

2. **A particularly strong rise in demand for new faculty is expected through the first decade of this century, and this rise will create an enormous challenge and opportunity.**

Section Two examines the projections in the PWC report of a need for 4,500 new faculty to meet the rise in enrolment and 5,500 new faculty to meet an unusually large retirement wave over the decade. A second set of projections by a committee of the Council on University Planning and Analysis (CUPA) reinforces these estimates and augments them by taking into account the need for replacements for faculty who leave their positions for reasons other than retirement. Since the current total of full-time university faculty is roughly 12,000, the number of new faculty that universities will need to recruit by the end of this decade is projected to be roughly equal to or in excess or the present total number of faculty. Moreover, the projections do not include an allowance for an increase in the number of faculty as a result of the growth in research activity expected of universities.

The pattern of demand for new faculty will be different in Ontario, in part, because secondary school reform will produce a surge in enrolment. The bulge from the so-called double cohort of students will largely disappear by the end of the decade, but full-time enrolment will not decline because of the other underlying forces for trend increases.

Thus, the challenge is to find and finance the very large number of new faculty needed – and needed sooner rather than later because of the double cohort. This challenge provides an unusual opportunity to enhance the quality of faculty in Ontario's universities.

In short:

If the opportunity is *seized*, Ontario will emerge from the coming decade with an even stronger complement of teachers and researchers in its universities and with a more commanding position of leadership in national and international dimensions of the modern knowledge-intensive society.

If the opportunity is *missed*, Ontario will find itself a decade from now with a serious deficiency in the number and quality of its university faculty and weakened in its ability to compete nationally and internationally in knowledge-intensive activities.

3. **The university sector in Ontario has a very limited capacity to meet the large projected rise in enrolment through more intensive use of the present faculty complement, if the quality of higher education in Ontario is to be sustained.**

Section Three considers six options for financing or curbing the need for additional faculty:

A. Greater efficiency in resource use: Always an appropriate long-term concern, current evidence does not point to the potential for significant gains or to comparative weaknesses in the Ontario university sector. Improvements in efficiency should not be confused with increases in the student-faculty ratio that reduce quality.

B. Higher student-faculty ratios: Increases in ratios have taken place during recent funding constraints. This route for curbing the need for additional faculty will heighten concerns about quality deterioration.

C. Increased tuition and other private revenue: Increases in tuition revenue (currently close to 40% of university operating income in Ontario) will automatically occur if enrolment increases, but the increased revenue will be insufficient to finance the required new faculty. Most universities have had limited success in supplementing this revenue with more private funds for endowed chairs. Moreover, if fees per student were to be raised, better student assistance would be needed. Alternatively, greater reliance on tuition revenue through increased fees in some high-demand professional programs, through new private universities or through opening the doors more widely to branches of institutions based elsewhere might provide some relief to public-funding requirements. But the near-term impacts are unlikely to be large, and the demand for new faculty will continue to be high. If new private institutions are introduced, the issue of consumer protection and quality assurance will also need to be addressed.

D. Reduced student access: To maintain quality of education, a reduction in student access with an accompanying reduction in new faculty requirements is an option. For the Ontario university sector as a whole, selection of this option would be worrisome. It would exclude students at a time when returns to a university education are high both to students and to society.

E. New targeted faculty recruitment program: Experiences with Ontario and federal targeted programs for faculty recruitment have been favourable. A new provincial program that complements the recently announced federal program of research chairs would be attractive.

F. Competitive operating grants: Ontario cannot long sustain an above-average quantity and quality of higher education with substantially below-average resources. The evidence points clearly to the need for a re-thinking of the appropriate level of operating grants in order to allow the universities to meet the challenges ahead and to do so on a firmer competitive base with universities in other jurisdictions.

4. Improved support for graduate study is urgently needed.

Section Four examines sources of new faculty and the diverse routes taken from graduate study to faculty appointment.

Compared to the late 1960s when demand for new faculty surged due to the arrival of the baby boom generation in universities, Ontario's graduate schools are better able now to provide a substantial supply of prospective faculty with advanced research degrees. But the long period of funding constraints has taken its toll in weakening the capacity of Ontario's universities for doctoral and postdoctoral study. The goal should not be provincial self-sufficiency in all areas, and the highest quality of faculty should be sought regardless of regional and national boundaries. But further strengthening of the universities' capacity for graduate studies is urgently needed, particularly where Ontario universities have first-rate programs by international standards, and it should be accompanied by better support for highly able students to pursue doctoral and postdoctoral study.

5. The higher demand for new faculty in Ontario will be occurring at a time of greater domestic and international competition for highly qualified faculty. Regulatory barriers to seeking the best teachers and researchers should be reduced.

The attractiveness of other professions has been increasing relative to the academic profession as a result of greater funding problems experienced by universities and expanding opportunities for intellectually challenging and financially rewarding positions outside the academy. A growing concern about this domestic "brain shift" is being expressed in a number of countries. In addition, universities in Ontario are facing more aggressive competition for faculty from other jurisdictions, particularly from the United States.

6. Three sets of factors are emphasized in Section Five as affecting recruitment and retention of highly qualified faculty:

A. Supportive environment for high-quality education and research: The best faculty prospects will have options where to pursue their career. Many personal factors will influence choice among those options, but there are also some widely shared professional factors that will influence choices by prospective faculty members. Among the latter are the commitment to a

vibrant academic environment in the department, university and province; the support for excellent students and other colleagues to work with; the adequacy of equipment and library materials; the reasonableness of the work load and bureaucratic and regulatory constraints; and the opportunity for special support in developing research and teaching strengths. Ontario's universities will need the resources to develop these professional factors more favourably if they are to compete in the international surge of demand for highly qualified faculty.

B. Flexibility and competitiveness of compensation: A major issue for Ontario universities entering the current more highly competitive domestic and international market for faculty will be the extent to which they have the flexibility and resources to be competitive for highly qualified faculty. The general level of compensation will be important, but rigidities that prevent differentials based on quality and market tests would take Ontario universities out of the competition for building high-quality universities. An aversion to exceptional rewards for exceptional quality and exceptional market forces will often be expressed both within and outside the academy, but the issue must be faced if a university is striving to hire and retain the best faculty.

C. Diligence in search for new faculty: Of enormous, and often not appreciated, importance in the recruitment of faculty is the diligence with which the established search procedures of the institution are implemented. While current appointment procedures are generally viewed as appropriate in Ontario universities, it is suggested that the care with which they are implemented will pay large returns in the quality of new appointments.

7. Sharing the responsibilities: recommendations.

And, so, will there be enough excellent profs? The greatest challenge to giving an affirmative reply lies not in whether a sufficient number of professors can be found. It lies in whether there will be the necessary funding and the determination to seek out enough professors of a very high quality for teaching and research. How this challenge is taken up will profoundly affect the individual and collective quality of Ontario's universities for decades to come.

Section Seven presents six recommendations for taking up this challenge, with an underlying theme of the shared responsibilities of universities, governments and the private sector. The list is deliberately short and the recommendations general to focus discussion on getting the basic directions right. The recommendations, in summary form and not in priority, are:

- Better research and analysis of issues facing universities are required and, of the various possible options, a low-cost form of an annual symposium is recommended.

- As Ontario universities reinvest in faculty to meet the anticipated expanded needs for undergraduate education, a strengthening of the capacity for excellent graduate studies should also be a high priority.

- Universities have a responsibility to apply their established search procedures for new faculty with great energy, enthusiasm, diligence, inclusiveness, and commitment to quality.

- Current restrictions on hiring in international markets should be removed.

- The current fundamental underfunding of the university sector in relation to competing university sectors in other jurisdictions needs to be corrected through higher general operating grants.

- In competitive markets for faculty, exceptional quality of faculty and exceptional market forces bearing on faculty will need to be reflected in exceptional rewards, if Ontario universities are to draw the best faculty, who are highly talented in teaching and research.

Section One

CRUCIAL ROLE OF FACULTY

A recent report (March 1999) by PriceWaterhouseCoopers (PWC) on projected university enrolment increases in Ontario in the coming decade was entitled *"Will there be room for me?"* The title used in this report *"Will there be enough excellent profs?"* reflects its complementary nature to the PWC report, since implications of the projected changes in that report for the recruitment and retention of faculty in Ontario's universities are examined.

Many factors affect the contribution universities can make to education and research – factors, such as the learning environment, the abilities and motivation of students, and the physical infrastructure. Thus, for example, the recently announced Ontario government program of $660 million to support expanded physical capacity in postsecondary institutions in anticipation of enrolment increases is a much-needed step. But no factor exceeds in importance the quality of faculty. It is faculty who help guide students' thinking through the relevant bodies of knowledge – challenging them to deepen their understanding of the world within and about them – and who provide evaluations of students' progress in chosen subjects. It is faculty who can have a powerful influence on the creative expressions, critical assessments and intellectual inspiration of students in advanced study. It is faculty who are major contributors to knowledge through their research and scholarly activity. Thus, the highest priority in sustaining and enhancing the quality of the university sector is the number and excellence of faculty.

This pivotal role is not always widely appreciated. Often public understanding is less than adequate with regard to such matters as the importance of academic freedom and the nature of a professor's work week. At the same time, faculty often shows a remarkable lack of understanding of the legitimate public concerns about responsibilities that should accompany academic freedoms. Public support is chilled. The mutual misunderstandings and misconceptions wax and wane over the years. Their continuation hampers the full development of the university sector, but they are unlikely to disappear entirely. They are well entrenched in public discourse. Moreover, other pressing issues that threaten a strong faculty foundation to the university sector will be given more emphasis in the following.

A theme of this report is that major shifts are taking place in demand conditions and competitive pressures bearing on hiring and retention of highly qualified faculty in Ontario and that the response to these shifts in the coming decade will profoundly affect the future quality of higher education.

Section Two

PROSPECTIVE RISE IN DEMAND CONDITIONS FOR FACULTY

TREND RISE IN STUDENT DEMAND

The PWC report *"Will there be room for me?"* carried the subtitle *Report on Capacity and Related Issues in Ontario's Universities in the Face of Record Student Demand for University Education over the Next Decade*. This report drew particular attention to a projected major rise in student demand for entrance to Ontario's universities in the coming decade and examined the capacity of universities to meet this demand.

According to PWC, there are strong trend forces that will tend to increase enrolment at Ontario's universities between 1998-99 and 2010-11 by nearly 90,000 students or by about 39%.

Table 1 summarizes the trend forces reported in PWC:

- The population of 18- to 24-year olds is projected by the Ontario Ministry of Finance to grow over the period by 190,000 or by 18%. PWC then applies the current proportion of 18- to 24-year olds studying at university to estimate a rise from this source of 41,000 in the number of students who will be seeking a university education by 2010-11.

- The participation rate – the proportion of the population aged 18 to 24 attending university – is projected to grow at a 1% compound annual growth rate over the next 12 years, consistent with most recent growth rates. As a result, the participation rate rises from 20.8% in 1998-99 to 24.8% in 2010-11 and leads to an additional 37,000 students.

- Changing workplace requirements are expected to increase student demand further. PWC notes, in particular, the stronger incentives for people to return to universities in mid-career to renew qualifications, to re-certify or to obtain advanced degrees "required as a consequence of the changing nature of work in an increasingly knowledge-based economy." (p.13) Moreover, it is pointed out that the ratio of graduate students to undergraduate students is currently much lower in Ontario than in the United States. For all these reasons, PWC makes "a conservative allowance for a further increase in the participation rate ...[of] a projected additional 8,300 students by the 2010-11 academic year." (p.14)

- The interactive relationships of the above factors is estimated to add a further 2,600 students to the total.

The effect of these four factors is to increase full-time enrolment from 229,500 to about 318,400, or by close to 39 %. But the projections are not intended to be exact, and PWC suggests "a range of between 295,000 and 337,000 students studying at Ontario's universities by the 2010-11 academic year. This is the range of uncertainty in the projection." (p.16)

Ontario, it appears, is not alone in having to confront projections of trend increases in enrolments of this magnitude. Thus, for example, the California Postsecondary Education Commission announced in the fall of 1999 that university enrolments in that state could be expected to rise by 36% by the fall of 2010, a percentage rise similar to the PWC projection. (See *The Chronicle of Higher Education*, September 21, 1999.)

IMPACT OF SECONDARY SCHOOL REFORM

These trend forces conceal the substantial upward steps in student demand that will occur within the coming decade as a result of secondary school reform in Ontario. The new secondary school curriculum structure will permit the completion of high school leaving qualifications one year sooner and will produce an overlap or double cohort of students for a period of years. The effects on student demand will likely be felt most significantly in universities over the period 2002-03 to 2008-09 with a peak in the 2004-05 and the 2005-06 academic years.

The upward steps in applications for admission is expected to move forward to 2004-05 much of the additional student demand projected by trend factors for the year 2010-11. The bad news for university planning is that there is a greatly increased urgency to put in place earlier the capacity that would otherwise not have been needed for five or six years later. The good news is that the additional capacity required for the upward steps from secondary school reform will not be followed by downward steps but can be part of a sustained upward rise, as the additional capacity will be absorbed in the upward trend of student demand.

IMPLICATIONS FOR FACULTY-DEMAND CONDITIONS

While the PWC report translated rising student demand into estimates of additional full-time faculty requirements, another source for estimates of faculty demand and supply is also available. The Committee on Faculty and Staff Reporting of the Council on University Planning and Analysis (CUPA) has prepared two background papers to accompany this report. The first paper, entitled *Modelling Supply and Demand for Full-Time Faculty*, examines factors affecting the demand for and the supply of full-time faculty and presents estimates of how many faculty will be required in the coming decade and how much of this demand might be met by doctoral graduates from Ontario's universities. The second, entitled *Faculty Renewal Revisited*, presents the results of three surveys that have been conducted over the past decade that examined faculty who left the employ of an Ontario university and newly appointed faculty to Ontario universities. These background papers reinforce the general direction of the conclusions of the PWC report and, indeed, point to an even more substantial recruitment problem ahead.

A. Enrolment-Based Demand

The PWC-projected rise in student enrolment can be converted into a projected rise in enrolment-based demand for faculty by applying a projection of the student-faculty ratio. Thus, PWC calculates that, if the student-faculty ratio were maintained at close to 19.3, over 4,500 new

full-time faculty would be required by 2010-11 to teach the additional students projected for the coming decade. (See Table 1.) The timing of requirements for additional faculty within the decade will reflect the temporary upward steps in enrolment caused by secondary school reform. As a result much of the increased need will occur in the next four or five years, but the hiring of faculty can be on a longer-term basis as the underlying trend forces will sustain the longer-term increase in demand for faculty.

The use of a single projected student-faculty ratio must be treated with considerable caution for many reasons:

- The aggregate student-faculty ratio has not been constant. Over the past decade the ratio has increased by about 30%.

- Demand conditions for faculty will be affected by the pattern of student demand for various programs. Over the past decade substantial shifts have occurred in applications to Ontario university programs, with science, engineering and commerce leading the shifts. As PWC notes: "These shifts highlight the need for universities to maintain the necessary flexibility in their program offerings and design to keep pace with changing student demands."(p.17)

- Projections necessarily involve much uncertainty. They are extensions of paths that observations have taken in the past and incorporate heroic assumptions about the nature of the paths into the future. They are sometimes distinguished from predictions where allowance is made for interactive relationships and adjustment processes. They can be helpful in showing the consequences of extensions based on assumptions but can be harmful if mistakenly interpreted as clear insights into the future.

- More generally, projections can highlight important areas for public policy discussion but do not anticipate what the public policy decisions will be. Thus, the student participation rate used in projections of enrolment draws attention to the state of access to university education and is an indicator whose level needs to be addressed by public policy. In addition, the student-faculty ratio is frequently used as an indicator of quality of education in the university sector. Though it needs to be considered in terms both of quality of education and productivity improvements in the delivery of education, public policy decisions on the funding of higher education will greatly affect the level of the ratio. In Ontario, more public policy discussion of desirable levels of these indicators is needed.

Enrolment-based demand for additional faculty is also accompanied by enrolment-based demand for additional support staff and additional graduate students to assist in the provision of university education. PWC notes in this regard that "data provided by the Council of Ontario Universities suggest that up to 5,400 additional staff, including academic support staff, maintenance and lab technicians will be required."

B. Replacement-Based Demand

Faculty members leave their positions for a variety of reasons. Table 2 provides data on reasons full-time faculty left their positions in Ontario universities in 1987-90, 1993-94 and 1997-98. Between about 20% and 33% of those professors who had left took other academic or administrative positions in educational institutions (the majority of these being in universities). Retirement accounted for between 45% and 50% in the two earlier time periods and then rose further to over 70% in 1997-98, as early retirement or incentive-based exit schemes were widely introduced into universities. The overall annual percent of faculty who left their positions for one reason or another was 5.2 % in 1987-90, 5.6 % in 1993-94 and 5.9 % in 1997-98.

This movement of faculty generates a demand for replacements. Since funds are left behind when positions are vacated and can be used for new hiring, the issue of resources is not the same as in the case of enrolment-generated demand for faculty. But the challenge to the search processes for new faculty is similar.

A major retirement wave of faculty is projected for the period 2010-11. Despite considerable attention to early-retirement programs and to faculty-renewal initiatives, a shift toward an older age structure of the professoriate has occurred in Ontario and in other jurisdictions in North America. PWC concludes that:

> Using the current age profile of Ontario university faculty, a projection of the planned retirements can be constructed. It is projected that more than 5,500 new professors will be required by the 2010-11 academic year to replace planned retirements alone. (p.32)
> [Moreover]
> This demographic profile is similar to that found in all universities in North America and in many other developed countries. As a result, the market for hiring qualified faculty will be increasingly competitive over the next decade. (p.30)

C. Total Faculty Demand and Key Messages

Table 3 records the PWC projections for enrolment-based demand for new faculty and replacement-based (retirement-based) demand for new faculty. According to these projections, Ontario universities would need to hire about 10,000 new full-time faculty between 1997-98 and 2010-11. Since total full-time faculty in all the universities has been about 12,000 recently, hiring for these two sources of demand would be equivalent to over 80% of the current complement of faculty. PWC also suggested that an additional 3,000-3,200 faculty be hired to effect quality improvements. (The 900 faculty positions that would likely be supported in Ontario under the federal government's research chairs program could be interpreted as the first step in addressing this need.) Table 3 also includes cumulative totals to 2004-05.

By way of comparison, the CUPA Committee on Faculty and Staff Reporting has estimated that realistically at least 9,350 and as many as 12,250 new full-time faculty will be required between 2000-2001 and 2010-11 in the disciplines included in its study. (The lower figure does not include any provision for quality improvements.) As these disciplines account for about 80% of full-time faculty, scaling up would lead to a total requirement of between 11,700 and 15,300 faculty over this period. Thus, the work by the CUPA committee supports – and indeed adds to – the large, required increases in faculty projected by PWC. The higher numbers in the CUPA committee report than in the PWC report can be attributed largely to the inclusion in the former of estimates of the number of faculty who leave their positions for reasons other than retirement. As noted above, a significantly higher proportion of enrolment-based hiring needs fall into the first part of the coming decade because of secondary school reform. New faculty to meet planned retirements is more evenly spread, though here, also, there is a somewhat greater concentration of hiring needs in the first part of the coming decade because annual retirement rates are expected to fall in the two or three years preceding 2010-11.

Projections, it was noted above, must carry a large measure of uncertainty around them. But, even with highly cautionary adjustments, some messages are unmistakably clear:

- Ontario universities face an enormous challenge to recruit sufficient numbers of faculty to meet the demand from anticipated enrolment increases and from planned retirements of faculty.

- The urgency of responding to this long-term need is heightened by secondary school reform that will bring forward and accentuate the steps in enrolment-based need for faculty.

- More competition for faculty can be expected, as jurisdictions elsewhere emphasize the importance of university education and face retirement patterns of faculty similar to those in Ontario.

- Greater research activity is another source of increased demand for first-rate faculty. Governments in Canada and abroad, as well as the private sector, are expanding support for research, and this expansion has implications for the number of required faculty.

The challenge, of course, is not simply the recruitment of sufficient numbers of faculty but the recruitment of sufficient numbers of highly qualified faculty. A recent report (March 1999) by the Ontario Jobs and Investment Board entitled *A Road Map to Prosperity* makes a strong case for attracting the very best minds to higher education and research. This position is strengthened in a subsequent report (December 1999), entitled *Growing Ontario's Innovation System: The Strategic Role of University Research*, by Dr. Heather Munroe-Blum.

A further message thus needs to be added:

- The demand for faculty is more than a matter of numbers. The quality of faculty matters greatly, and competition will be the fiercest over faculty who are especially gifted in education and research.

Section Three

OPTIONS FOR MEETING ENROLMENT-BASED NEED FOR FACULTY

Projected enrolment increases imply that substantial new hiring of faculty will be needed in the coming decade. But will there be the resources to make this possible? Six options for finding the necessary resources or for curbing the need for resources are considered here.

Option A: Find necessary resources through greater efficiency in the operation of universities.

Important as it is to make the most effective use of resources available to universities, this option cannot solve the problem. PWC recognizes that "efficient, economic and effective use of resources will most certainly be required" but states:

> Over the next twelve years, demographic projections indicate that a student body equivalent in size to that of the University of Toronto, or five universities combined, the size of Brock, Ryerson, Guelph, Wilfrid Laurier and Windsor, will be added to Ontario's university population from the anticipated increase in the 18- to 24-year old demographic. It is for this reason that *the level of change in demand must be seen as an order-of-magnitude level change in demand that cannot be addressed simply by annual 'productivity' changes or efficiencies.*[italics added] (p.7)

Studies of working hours per week do not confirm popular notions that the work week is relatively short for faculty in Ontario. Studies at the University of Western Ontario and at Laurentian University, as well as studies at a variety of universities in the United States, find the average work week to range generally between 50 and 60 hours.

Broader studies of efficiency in universities, with rigorous analytical and empirical bases, are rare. One interesting step in this direction was taken by two economists at the University of Alberta – Melville McMillan and Debasish Datta – and was reported in *Canadian Public Policy* (December, 1998). They acknowledge that much further work needs to be done before firm conclusions can be drawn but, on the basis of their sample of 45 universities across Canada, including 16 from Ontario, there is no evidence in their statistical work that universities in Ontario systematically fall into a less efficient category than universities in other provinces. Only one Ontario university had an efficiency score in the lowest quartile in their study.

Option B: Allow the student-faculty ratio to rise rather than hire more faculty.

The substantial rise that has already taken place in the ratio of students to faculty should provide a warning that further reliance on this route is most likely to mean deterioration in quality rather than greater efficiency, in the proper sense of that word. The student-faculty ratio has been rising

and is high in relation to other provinces. Thus, the ratio of full-time enrolment to full-time faculty rose in Ontario between 1987-88 and 1997-98 from 14.6 to 19.3 (that is by 32.2%). In the other nine provinces it rose from 13.7 to 16.0 (that is by 16.8%). Ontario moved from having had the fourth highest to having the highest student-faculty ratio among the provinces.

Option C: Generate additional resources through increased tuition revenue.

Enrolment increases will increase revenues to universities because of tuition fees paid by students. The amount of the increase available for the recruitment of more faculty will depend on the size of the fee, which varies by program, and on other priorities for expenditures to sustain the learning environment. In addition, the Ontario government has required in recent years that at least 30% of increased tuition revenue from fee increases be allocated to more student assistance. Rising tuition revenue associated with rising enrolment is insufficient to hire new full-time faculty at current student-staff ratios.

Some of the problems, it might be suggested, could be solved by raising tuition fees. This route has been frequently travelled, especially during the past decade, in Ontario. For example, the maximum tuition fee for a Bachelor of Arts program has increased by steps from $1,411 in 1988-89 to $ 3,874 in 1999-2000. Tuition plus non-tuition fees provided 20.3% of university operating income in Ontario in 1987-88 and 37.6% in 1997-98.

Greater flexibility in the setting of fees by universities has been introduced, especially for professional programs that have been in high demand and where the returns on graduation tend to be high. Also, interest has grown in having some selected programs within the present set of universities financed by private funds generated almost entirely from high tuition fees. For example, a number of Ontario universities have taken this path with respect to MBA programs.

Shifting more of the financing of university operations from public grants to student fees has not, up to now, had the negative effect on enrolment many people had feared would occur. Greater freedom for universities to set fees is important not only to reflect different demand and cost structures of programs but, also to respond to student choice for quality of programs, which will be influenced by the number and quality of faculty teaching in them. But sufficient student assistance is critical too. Fees have moved to levels that, particularly without more supportive student assistance programs, barriers to access are likely to be more worrisome. Thus, within Canada, university tuition fees in Ontario are generally higher than in any other province with the exception of Nova Scotia. Without improved student assistance, tuition fees alone can provide only a limited solution to the generation of resources required to avoid a further severe deterioration in the student-faculty ratio.

A more radical step in the Ontario environment would be the introduction of private universities. This matter was explored in the 1996 *Report of the Advisory Panel on Future Directions for Postsecondary Education*. It was emphasized that strict conditions for approval of any such institutions should be maintained and that it was unlikely much additional capacity to handle student enrolment would be added in the medium term. Certainly that is the lesson to be drawn from England and Australia, where private universities were added to a public university system.

Another approach would be to open the door wider in Ontario to the establishment of branch operations of universities based in other jurisdictions. The costs of such operations would be covered by student fees. Through Ministerial Consent, approval can now be given for such operations.

The extension of government permission to establish new private universities and branches of institutions based elsewhere would likely raise concerns about quality assurance and consumer protection. In an accompanying report to this one – "*How will I know if there is quality?*"– it is suggested that a small, carefully designed organization may be necessary to consider and recommend on issues of quality in such cases. Also, the extension of government permission in these cases would likely raise concerns if existing universities were restricted from competing with the new institutions because of regulations, including regulations on fees.

To the extent that new postsecondary institutions are established in Ontario, the issue of meeting the rising demand for new faculty is not solved. There is a shift in the institutional origin of the demand. A reduction in demand would occur, however, if there were a significant shift to using the Internet to tap into postsecondary education courses produced in other jurisdictions. The costs of such courses are recouped through special charges or fees for access to presentations through the Internet.

Option D: Reduce need for new faculty by reducing student access.

Over the past 40 years, Ontario governments have affirmed a policy on access to university education that can be generally described as an assurance there will be a university place for all students who have the ability and motivation for university studies. Whatever might be questioned about specifics of that policy, including at what cost to students and at what level of quality of the university place, the evidence shows that Ontario has, in fact, achieved a very high rate of access in comparison to other jurisdictions. At one time, the university participation rate of the 18- to 24-year-old group lagged well behind that in the United States but has caught up. Some countries, such as the United Kingdom, have recently followed a deliberate policy of raising the participation rate and have been highly successful in this regard. But Ontario's participation rate remains higher. This performance characterizes the country as a whole. According to recent OECD data, Canada's participation rate is the highest among all OECD countries.

Thus, Table 4 confirms Canada's high international standing on participation rates for university-level education as well as for non-university tertiary education. Data are provided for two age groups – age 18-21 and age 22-25, and the Canadian rates are compared to those of the United States and to the mean of 25 countries in the OECD database.

The emphasis on access has frequently led to questions about whether the support of quality of education was being unduly neglected. These questions are likely to be raised more vigorously if resources are kept largely fixed and must be spread more thinly to meet the large projected rise in enrolment. In short, in the allocation of a fixed quantity of resources to support higher education, there is a trade-off between the support of access and the support of quality.

Should Ontario therefore aim for a lower participation rate, avoid the resource requirements for a greatly expanded student enrolment, and thereby emphasize the maintenance of quality? It is essentially a political question and one fraught with controversial aspects. But, at a time when the evidence points to substantial returns from further investment in higher education and the benefits to Ontario of a further strengthening of its knowledge base are increasingly being recognized, a deliberate reduction in access would not appear to be desirable.

Might it make sense, instead, to implement a tiered university system? For example, one tier of universities might be mandated to emphasize access at lower cost, with lower standards of admission and higher student-faculty ratios. The other tier might be mandated to emphasize the highest quality of research and advanced study, with higher standards of admission and lower student-staff ratios. Such tiering is found in many U.S. states and some European countries.

The disadvantages of Ontario adopting a tiered university system to meet the enrolment challenges that lie ahead would appear to be large. Such a step would be contrary to the basic philosophy that has guided the evolution of the university sector, and tensions from a sudden shift in direction would be high. The Ontario sector has developed a high degree of differentiation among its institutions, and a two-fold classification based simply on access and quality would overlook benefits stemming from the more complex differentiation that has evolved.

One of the distinctive, great strengths of the Ontario approach has been a combination of competitive and collaborative features, much of which would be lost by the segregation of institutions into non-competing, non-collaborating divisions.

Option E: Targeted public programs to recruit more faculty.

Increased government grants to universities frequently come in targeted form. The appeal to governments is that specifying the use of funds will reinforce, and make more visible, priorities the government wishes to emphasize and, at the same time, misgivings by governments about the reliability of universities to allocate funds appropriately will be eased. The constraints and distortions such an approach can create are less severe when there is a reasonable degree of substitutability in the use of funds or when the specified use of funds is in line with priorities as determined by the universities.

The evidence that has been presented earlier in this report points clearly to the need for resources to hire additional faculty in the coming decade. A program of support for new hiring would be consistent with this need.

Thus, the announcement by the federal government in October 1999 that it would fully fund 2,000 research chairs in universities across Canada is welcome news, and this initiative will add significant resources to the support of faculty in Ontario. The allocation among universities will be related to the past success of universities in competitions for federal granting council funds, and, on this basis, it is expected that perhaps about 45% of the chairs will come to Ontario universities. If so, about 900 new faculty positions would be supported. The gain, however, is not

as large as this figure would suggest, since additional funds will be needed to fund the support staff, equipment and other infrastructure associated with the appointments. Moreover, such appointments typically do not bring as much relief from teaching pressures, though they add importantly to advanced specialized study and research.

A decade ago the Ontario government supported a faculty renewal program that was intended to help phase in new young faculty in anticipation of the impending major retirement wave. At its peak in 1992, it supported about 500 additional faculty positions, but they were not endowed positions. Funding support was to be replaced by the freeing up of funds from retirements. The initiative was important in spreading out the pressures on hiring and providing some temporary relief from teaching pressures. It will be useful to consider if there is a similar initiative that would help meet the current pressures and complement the program of research chairs allocated by the federal granting councils.

Option F: Raise operating grants toward competitive levels in North America.

Universities in Ontario face the challenges of expansionary pressures after being in a long period of severe public-funding constraints. By various measures these constraints now place the universities at a competitive disadvantage in relation to other jurisdictions in North America. Measures, such as operating grants per capita, reveal a particularly bleak picture. Measures, such as revenue per student, which incorporates recent increases in tuition revenue, are less severe, though still a source of much concern. The following series of observations on such measures provides a sense of the seriousness of the constraints:

- Provincial operating grants per capita to universities in Ontario declined by 23.0% between 1992-93 and 1999-2000 and by 13.8% in other provinces.

- Provincial government funding to Ontario universities is about $1.64 billion in 1999-2000, down about 18% from the peak of just over $2.0 billion in 1992.

- Total revenue per full-time equivalent student in 1995-96 in Ontario was 69.7% of that for comparable public universities in 11 major U.S. states, eight of which border on the Great Lakes. In comparison to private universities in these states, the Ontario percentage drops to 41.3%. These comparisons are for research- and doctoral-level universities in the two countries.

- Total revenue per full-time equivalent student in Ontario was 70.7% of that for public universities in 11 states in 1996-97 and 72.4% in 1997-98. These figures relate to all four-year public universities, not just to research- and doctoral-level ones. Data for private universities are not included.

- A COU report, *Ontario Universities - 1997: Resource Document*, pointed out that, in comparison to the other nine provinces, Ontario universities were lowest in the public-funding scale – ranking 10th out of 10 in 1997-98 provincial per capita funding. Additional annual funding of about $600 million would be needed to raise Ontario universities up to the average of the other nine provinces.

- The same report noted that Ontario had just had the largest two-year decline in public funding of universities of any province in Canada *and* of any state in the United States.

- This COU report for 1998, published in May 1999, noted that there was an increase of about $65 million, or 4.2%, in operating grants in 1998-99, but the increase was entirely for new targeted initiatives. Core, unrestricted funding did not increase. The additional funding, the report stated, decreased the funding gap between Ontario and the average of the nine other provinces to about $500 million. But Ontario still remains the lowest in per capita public funding among the provinces. Also, Ontario "ranks 59th out of the 60 Canadian and U.S. jurisdictions in terms of the five-year relative change (1992-93 to 1997-98) in provincial or state funding for operating expenses of higher education." (p. ix)

- This same publication also reported on total operating expenditures per student, which would have been financed through all sources of revenue – operating grants, tuition revenue and other revenue sources. In 1994-95 Ontario ranked 7th among the 10 provinces by this measure and has moved to 4th position in 1999-2000. It is of interest that in 1994-95 operating expenditures per student in elementary and secondary schools placed Ontario first among the 10 provinces and operating expenses per patient-day in hospitals placed Ontario third among the provinces.

- COU's 1999 *Resource Document*, to be published soon, will show that Ontario's universities remain 10th out of the 10 provinces in provincial operating grants per capita. In terms of the four-year relative change (1995-96 to 1999-2000) in provincial or state funding of operating expenses of higher education in Canada and the United States, Ontario ranks 59th out of the 60 provinces and states.

Much debate can take place over the best measures to use. But the general picture cannot be disputed. Public funding of Ontario universities has been under severe constraint in recent years, placing the universities at a funding disadvantage with respect to the average position of other jurisdictions in North America. The option of increasing public-funding support to a level closer to the average for other jurisdictions would be a major contribution to resolving issues related to expansion of student demand and faculty requirements.

SIFTING THE OPTIONS

Political decisions will determine which options are emphasized and which are not. But a number of points relevant to choices among options are suggested here.

Option A (Efficiency Improvements)

The avoidance of waste and the careful use of resources in line with highest priorities must be an ongoing concern, if universities are to function effectively. But this option can do little to relieve the severe, emerging demand pressures for faculty.

Option B (Higher Student-Faculty Ratios)

Student-faculty ratios have already risen significantly in recent times. To continue to rely on this route to reduce the need for faculty is to accept deterioration in the quality of the teaching and learning environment.

Option C (Larger Tuition Revenue)

Increases in student enrolment will generate greater revenue through tuition fees. Currently, close to 40% of university operating income in Ontario is derived from student fees (tuition and non-tuition fees). Important as this source of revenue will be in meeting expanded student demand and faculty requirements, there is a danger that further fee increases will deter access, if there is not a substantial improvement in student assistance. Alternatively, greater reliance on tuition revenue through increased fees in some high-demand professional programs, through new private universities or through opening the doors more widely to branches of institutions based elsewhere might provide some relief to public-funding requirements. But the near-term impacts are unlikely to be large, and the demand for new faculty will continue to be high. If new private institutions are introduced, the issue of consumer protection and quality assurance will need to be addressed.

Option D (Reduced Student Access)

If there were not sufficient resources to meet the increased student demand without deterioration in quality of education, Option D would be to curb access in order to sustain quality. But this approach would mean a change in a fundamental principle in higher education long held by Ontario governments. Moreover, the adoption of Option D would seem out of place at a time when the estimated returns to a university education are high and when the aspirations for Ontario to be a world leader in developing a knowledge-intensive society are also high.

Option E (Targeted Faculty Enhancement Program)

The government could initiate a new targeted program directly linked to the recruitment of additional faculty. Experience with a faculty renewal program a decade ago was favourable. The federal initiative of research chairs is helpful but inadequate to meet the requirements of the coming decade. Option E has considerable potential to assist in tackling the problem.

Option F (Competitive Operating Grants)

Ontario cannot sustain an above-average quantity and quality of higher education with far below-average resources. The evidence points clearly to the need for a re-thinking of the appropriate level of operating grants in order to allow the universities to meet the challenges ahead and to do so on a firmer competitive base with universities in other jurisdictions.

Section Four

SOURCES OF FACULTY

The basic source of new faculty can be traced to graduate programs. A normal prerequisite for a faculty appointment is evidence of an ability and motivation to undertake advanced study to the PhD level and, particularly in the sciences, to undertake additional postdoctoral studies. The investment in qualifications that adds to a four-year undergraduate degree is thus a substantial one, with graduate study averaging about four to six years, along with additional years of postdoctoral research or part-time experience in teaching. The length of the investment is not uniform and varies among programs and individuals, with sciences having, on average, a shorter time to completion of the PhD but a greater expectation of a period of postdoctoral research.

At the time of the last great surge in enrolment in Canadian universities, associated with the arrival of the baby boom generation in the 1960s, great concern was expressed about the inadequate capacity of Ontario's postgraduate programs to supply new faculty and about the need for public policy initiatives to help remedy the problem. A rapid expansion of graduate programs occurred. Compared to the earlier period, Ontario's graduate schools are better able now to provide a substantial supply of prospective faculty with advanced research degrees.

Tables 5A and 5B report on intake into Ontario doctoral programs and degrees awarded in these programs at the beginning of the 1980s, at the beginning of the 1990s, and toward the end of the 1990s. The supply of new doctoral degrees in 1997 would be close to providing the annual need for new faculty over the coming decade. But reliance on this simple calculation would be misleading for a number of reasons:

1. First, the long period of funding constraints – particularly in the 1990s – has taken its toll in weakening the capacity of Ontario's universities for PhD and postdoctoral study. As Table 5A shows the intake into doctoral programs has declined in the 1990s, though, because of the long lags in the production of PhDs, degrees awarded continued to climb and they climbed relative to the United States. But the PWC report points out that Ontario is substantially behind the United States in the ratio of graduate students to undergraduate students:

   > In Ontario, the ratio of undergraduate students to graduate students is 5.4 to 1. In the U.S., it is 2.6 to 1. Moreover, Ontario universities will need to attract more graduate students to meet the teaching, research assistant, laboratory demonstrator and tutorial leader requirements of the projected undergraduate student demand. (p.13)

2. The domestic supply of faculty candidates with new doctoral degrees will not correspond to domestic demand because many students will seek positions in other countries or other parts of Canada. Ontario is a net exporter of candidates with doctoral degrees within Canada. It finds a high proportion of academic appointments from within Ontario and Canada, but it also takes part in an important international movement of scholars.

Table 6 shows the locations from which Ontario universities have recently drawn their new appointments. It reports on a survey concerning new faculty appointments by location of previous employment or study. In the three time periods – 1987-90, 1993-94 and 1997-98 – about 50% came from Ontario, about 25% from elsewhere in Canada, about 15% from the United States, and the rest from other countries. Table 7 shows, for the same time periods and countries, the locations to which faculty leavers moved. The data are consistent with a relative rise in the number of faculty moving to the United States compared to those moving to Ontario from the United States.

3. Various routes are taken to a faculty appointment. Table 8 uses the same survey of Ontario universities reported in Table 6 and shows the previous type of employment or study of new faculty appointments. A considerable movement among universities is recorded, as up to a half of new appointments came from full-time teaching positions at another university. Only between 18% and 30% came directly from graduate study or postdoctoral positions. Previous employment in government, industry or self-employment characterized between 11% and 13% of new appointments.

4. Part of the domestic supply of candidates with new doctoral degrees is drawn into positions outside academe, because requirements for investment in advanced knowledge are becoming more characteristic of many positions. Concerns about over-production of PhDs in some fields a few years ago have become less serious as new types of positions emerged that favoured the holding of a doctoral degree. It is becoming increasingly important to have strong graduate programs for filling many types of positions in the private and public sectors.

   Table 9 shows the distribution of employed earned doctorate holders in Ontario in 1996. The distribution is classified by industry and selected major discipline groupings. It is of interest to note that 39.5% were employed in university, 29.8% in government and other public services and 30.7% in business management, manufacturing and private sector. Graduate programs at the PhD level are clearly no longer primarily to train future professors.

5. Ontario has an increasingly diverse population and increasing diversity should be expected in the faculty complement. The inherent lags in this transition will be shortened, though still significant, with the substantial hiring in the next decade. In this connection it is interesting to note that the proportion of full-time PhD students in Ontario who are women has risen from 25.7% in 1976, to 36.9% in 1986, and to 42.9% in 1996. The proportion of full-time faculty who are women rose from 13.5% in 1976, to 16.7% in 1986, and to 25.1% in 1996.

6. The CUPA Committee on Faculty and Staff Reporting also examined the supply issue in relation to anticipated demand. Using the demand figures presented earlier, and supply estimates of Canadian doctoral graduates who may find employment in Ontario universities, the committee estimates that only between 30% (when high demand is compared to low supply) and 50% (when medium demand is compared to medium supply) of the required faculty will be obtained from the pool of new doctoral graduates.

7. Retirees are a potential source of supply that might help fill teaching needs on a contractual basis. Unlike some other jurisdictions, Ontario has not extended mandatory retirement beyond age 65. But departments and programs that have difficulties in filling faculty positions in the short term might find it attractive to tap into the forthcoming enlarged pool of retirees, if there is evidence of high quality in teaching. This attraction could be especially strong during the period of extra demand pressures from the double cohort.

The picture that emerges from this brief survey of sources of new faculty is that:

- Ontario's capacity to generate faculty prospects through its graduate programs has increased substantially since the 1960s. But it has been weakened during the constraints of the 1990s, and the ratio of graduate to undergraduate students is currently about half as high in Ontario as in the United States.

- Additional pressure on graduate programs is arising from the growing number of non-academic positions for which a background in graduate studies through to the PhD is important.

- Cost of investment in graduate studies is high especially when foregone earnings are factored into the costs.

- The diversity of students in graduate studies has increased. Higher faculty-hiring rates in the coming years provide an opportunity for greater diversity among graduate students to be reflected in a greater diversity in the faculty complement than would otherwise be the case.

- Ontario and other provinces have recently been the source of about three-quarters of the faculty appointments in Ontario. A goal of self-sufficiency would be costly and contrary to an emphasis on quality.

- The CUPA committee estimates, cited above, suggest a substantial deficiency in the number of new Canadian doctoral graduates to meet the projected faculty requirements. But the greater challenge in the coming decade is not finding a sufficient number of new faculty, rather finding a sufficient number of very high-quality faculty.

Section Five

DOMESTIC AND INTERNATIONAL COMPETITION FOR HIGHLY QUALIFIED FACULTY

Competition for the best faculty has always been high but is likely to be particularly intense over the coming decade. Key factors heightening this competition can be briefly described:

Higher Domestic Demand: combined effects of replacement and enrolment-based demand for faculty in Ontario.

Section Two of this report included projections of these two types of domestic demand for faculty and noted that, together, produce an unprecedented demand over the coming decade.

Constrained Domestic Capacity: curbs on domestic supply of new faculty from effects of funding constraints on Ontario graduate programs.

In the previous section, attention was drawn to the effects of severe funding constraints on the capacity for graduate study, effects which were emerging in the 1990s and which are not easy to reverse quickly.

Relative Allure of Other Occupations: attractions, in particular of other professions compared to faculty positions in universities.

Concern that the brightest minds may have become less attracted to academic positions has been growing in a number of countries. It is argued that more people, who in the past would have sought academic appointments, are being drawn to other intellectually challenging professions because of the offer of superior conditions.

Alan Ryan, Warden of New College, Oxford – in a recent article in *Prospect* (August-September, 1999) – speaks of a serious internal brain drain in Britain: "Few really clever and ambitious students now go into academic life. The brain drain to the U.S. is less serious in the humanities than the brain drain into the city, journalism, law and commerce."

In the United States there has been less concern about a general internal brain drain but there has been concern about specific areas, such as information technology. The irresistible attractions of burgeoning private companies in the communications sector has depleted top university departments, despite strong efforts to compete. Reference is sometimes made to the "seed corn" issue, which means that if enough of the best intellectual leaders in a field are not left in the universities to educate the next generation of students, the quality of future production of intellectual leaders in the field will decline.

In Ontario and Canada, careful study has not been made of this phenomenon and more attention has been directed to the issue of an external brain drain. But casual observation tends to support concerns about internal brain drains being expressed elsewhere.

Competition from Other Jurisdictions: the national and international context of recruitment and retention of faculty.

Much controversy surrounds the issue of a brain drain in Canada. This report does not attempt to add to the debate, rather sifts a few summary points relevant to the competitive issues in the international market for faculty:

- Canada gains with respect to the general level of education of people flowing into and out of the country.

- The U.S. market for top faculty is extraordinarily strong and competitive and has become more so in recent years. For example, the *Economist* (August 21, 1999) refers to a study by Sharon Levin of the University of Missouri and Paula Stephan of Georgia State University of 4,500 top-rate scientists and engineers in the U.S. It points out that "... in 1980 only about a fifth of the scientists in America (those with doctorates, at any rate) had been born abroad. Over the subsequent decade, 60% of the American-based authors of the most-cited papers in the physical sciences were foreign-born, as were nearly 30% of the authors of the most-cited life-science papers. Almost a quarter of the founders or chairmen of the biotechnology companies that went public in the early 1990s also came originally from outside the country."

- Data on the movement of faculty between Ontario and the U.S. show a recent growth in the relative drawing power of the U.S. The percentage of faculty who left Ontario universities to go to the U.S. rose from 13.0 in 1987-90 to 16.6 in 1993-94 and to 22.5% in 1997-98 (an increase of 74% from the end of the 1980s). At the same time, appointments in Ontario that drew faculty from positions in the U.S. declined from 16.1 to 14.7 to 14.1 for the same years.

- The international competition for those with great ability and investment in education is not confined to universities. For example, the CEO of Northern Telecom, John Roth, has been expressing great concerns about the difficulty of competing for top talent in Canada. As he stated in an interview in the *Ivey Business Journal* (November-December, 1999): "... when I talk about the brain drain, I'm not talking about commodity engineers. I'm not talking about the average software programmer. I'm talking about the achievers who are going to lead projects. It's those leaders and high-value jobs we're losing and they are a fraction of a percent of the pool. But the impact of their loss on the Canadian economy and on Canadian productivity is major. You lose them and the project teams and career opportunities go with them. That's the real brain drain – the real threat to Canada's future in the Internet economy." (p.24)

Restrictions on International Recruitment: should current restrictions through the requirement for two-tier advertising be relaxed?

At present Canadian universities are normally required, under federal immigration regulations, to advertise for new faculty who are Canadian citizens or landed immigrants. If the search with this restriction does not yield candidates with the required qualifications, the university can proceed to advertise more widely. Exceptions are made in fields that have experienced particularly strong demand for faculty, including management studies and computing science. It is usually estimated that this restriction adds about one year to the search process, when it is necessary to go to the broader search. In view of the substantial projected increase in demand for faculty and the more intense international competition that is emerging – as well as the more open and careful search processes universities have adopted since the restriction was introduced – the dismantling of this restriction over all disciplines would appear to be appropriate. Resistance to removing the restriction can nevertheless be expected because of the tendency to want to avoid greater international exposure to competition.

This section has emphasized that the domestic and international marketplace in which Ontario universities must compete for the best faculty is becoming intensely competitive. Will these conditions require Ontario universities to move down the scale of quality in making appointments, or are there conditions that would enable them to compete effectively at current or higher levels of quality? That question is taken up in the next section.

Section Six

STEPS TO ENHANCE RECRUITMENT AND RETENTION

Three sets of factors strongly influence recruitment and retention of highly qualified faculty:

- the supportive environment for high-quality education and research;
- the flexibility and competitiveness of rewards; and
- the diligence of search procedures for new faculty.

Many factors enter into decisions on faculty appointments, but these three are suggested as particularly important.

SUPPORTIVE ENVIRONMENT FOR HIGH-QUALITY EDUCATION AND RESEARCH

A scholar rarely seeks the isolation of a hermit. Teaching and learning are interactive pursuits and bring excitement, pleasure and satisfaction depending on the learning environment – on whether class sizes can be kept within reasonable limits for the subject; on whether the necessary equipment and library materials are available; on whether support services and physical infrastructure are adequate; and – perhaps most important of all – on whether a spirit of learning pervades the institution.

Most research also has strong interactive aspects – the stimulus to new ideas that comes from working with students; the collaboration with colleagues on projects; the testing of ideas down the corridor or in the seminar room; and the availability of electronic linkages for widening the opportunities for interaction across the world.

A serious, much-sought-after scholar will weigh the extent to which a university – and prospective home department within it – has an environment conducive to the development of teaching and research. Other duties as well as regulations will be assessed. Thus, it is widely accepted – perhaps with an air of resignation – that a considerable amount of committee and administrative work is characteristic of universities, a reasonable price to pay for the pleasures of the high degree of professional independence of faculty and the consultative style of governance it requires. But this kind of work is not to be officially encouraged or exalted, and the best university environments are often considered to be those that generally scorn the unlucky professor drawn into excessive practice of administrative activities.

The shift toward unionization of Ontario faculty has been a notable feature as 13 of Ontario's 17 universities developed formal collective bargaining agreements under the Ontario Labour Relations Act since the 1970s. The other four have more formal internal procedures for negotiation and conflict resolution than they had two or three decades ago. While unionization of faculty is characteristic of many countries including, for example, the United Kingdom and Australia, it has not become as widespread in the United States, especially in institutions ranked

highly in quality ratings in that country. How will this development affect the relative attractiveness of the Ontario academic environment? Might it have a negative effect by weakening, through more rigid internal regulations, the adaptability of universities to respond to shifting student interests and emerging areas of strength and by weakening decision-making processes through a shifting from collegial processes to formal negotiations and occasional confrontations? Or might it have a positive effect by clarifying and codifying terms of employment and work conditions, by bringing a greater perception of fairness to decisions affecting a faculty member's appointment and by providing a greater assurance of balanced responses to grievances?

Many people have strong – and often opposing – views on what the answers are, or should be. But the reality seems to be that this development is evolving with particular attention to specific institutional needs and that it has not been a significant factor up to now in diminishing the attractiveness of a faculty appointment in Ontario compared to the United States. A major test of the correct answer will be in the coming decade when universities will be under great pressure to adapt and to re-staff.

The environment that affects a scholar's decision about location is, of course, broader than that in the home department and university. The general environment for universities in the province and country will be important too. The decision to locate in another country or to take up – or remain in – an appointment in Canada is influenced by such factors as the state of funding of the federal granting councils and initiatives such as the endowed research chairs for the 21st century. The drawing power of Ontario to current and prospective faculty is influenced by assessments of prospects for the support of its universities. Excellence in universities often comes in clusters and through competition with other clusters, as a set of universities combine their commitment to excellence with private and public support in the area and find their standard of excellence and motivation in seeking to excel in relation to other clusters. California, Texas, North Carolina, New York, and the New England states all provide examples of this process of competitive clusters.

FLEXIBILITY AND COMPETITIVENESS OF COMPENSATION

The emerging pressures for exceptionally large faculty recruitment will test the adequacy and flexibility of compensation policies of universities. If the earlier recruitment wave associated with the baby boom generation is a guide, competitive pressures initially bid up compensation in the new-hire, more junior end of the market, and concerns about a salary inversion may occur when new appointments carry higher remuneration than earlier ones. With a lag, competitive pressures and greater funding tend to smooth out this inversion. The more competitive conditions will also expose larger differences in relative demand conditions among disciplines and test the flexibility of institutions to respond. More generally, the competitive forces will test the flexibility of an institution to adjust rewards in line with market tests or else to reduce expectations of the quality of faculty being sought.

Data are limited for moving beyond sporadic information on individual cases to examine more generally competitive levels of compensation. But, Table 10 provides data from the 1996 census

on average employment income of doctorate holders in Ontario. The data are classified by industry and selected major groupings of disciplines. The data are average employment incomes for nearly 30,000 holders of doctorates, and much is concealed in such averages. At least in terms of averages, however, it appears that employment income in the university sector is roughly in line with employment income in government and other public services. It is less than employment income in manufacturing and the private sector. Considerable variation occurs among the disciplines with income for the social science and related sector being particularly high in manufacturing and the private sector.

There are those people, of course, who believe that the noble profession of university teaching and research should bring its own pleasures and require little recompense – that it is best not to pay professors very much and that this sieve will screen out those who are really dedicated to the profession. If that were ever true, it is not likely to be a successful approach in the coming decade of competitive pressures for high-quality faculty. But the tendency to resist differentiation in response to competitive pressures is deeply ingrained in the thinking of many people in Ontario associated with higher education – or, at least, it has been more deeply ingrained than in the thinking of many people associated with the development of major U.S. universities. An important issue for Ontario universities entering the current, more competitive environment for faculty will be the extent to which they are prepared to be competitive and accept what that means in terms of differentiation of compensation.

DILIGENCE IN SEARCH PROCESSES

Building excellence in the faculty of a university depends greatly on the excellence of the search processes for new faculty. A new tenure track appointment is a major investment that is likely to carry substantial, long-term costs and will yield a return in teaching and research that is expected to justify this cost. Of course, the investment decision cannot be reduced to a financial calculation, and the returns are largely non-monetary. But the value of an appointment will reflect how well those involved in the selection process assessed the successful candidate's potential to contribute to the work of the department and university in comparison to the potential of alternative candidates.

Particularly since the 1960s, Ontario universities have developed more formal, more complex and more explicit procedures for appointments through agreements with faculty associations and through approval of the procedures by senates and boards of governors. In general, the procedures are designed to make sure all appointments are widely advertised, that faculty and students have an opportunity to participate in varying degrees in the sifting of names, and that lines of responsibility are clear for making an offer of appointment and finalizing an appointment through the upper echelons of the governance structure.

The procedures are generally viewed as working reasonably well at this time, and there is no widespread call for reform. The extent to which the pattern of appointments reflects the diversity of the pool of candidates has generated perhaps most attention and will need continued monitoring. But, as noted earlier, the projected acceleration in the number of appointments should also increase diversity of faculty. The rate at which an increased diversity in the potential

supply of highly qualified faculty becomes reflected in the diversity in the stock of faculty will be related to the rate of new hiring. Universities will need to be sensitive to the changes that should be taking place in this regard over the coming decade of major recruitment.

The era of large-scale hiring in a more highly competitive environment will mean a more major test of the search procedures. The quality of the results will depend on how the procedures are implemented. Thus:

- Forward planning of a year or two will be helpful. Thorough job searches in the academic market take time, and excellent candidates often need time to become familiar with the institution and to assess their options.

- Creating a widespread awareness of the faculty openings is necessary. In this regard, the placement of advertisements about vacancies in leading publications of the academic market is now widely accepted and is highly desirable.

- Advertisements are insufficient. Someone – whether it is the chair of the department in which there is a vacancy or the head of the hiring team – must take responsibility to ensure that the market is actively scoured for highly qualified candidates, who often will not respond to advertisements. Indeed, the list should be built over the years as information is gleaned on strong candidates coming out of graduate or postdoctoral programs and on bright prospects who might be attracted from other institutions.

- A committee is essential that will guard against bias in the sifting of candidates and that will help gather expert opinion on the qualifications of candidates.

- Full documentation on candidates who might be considered seriously will be necessary, including reference letters, along with biographical material and other evidence of qualities of teaching and research.

- Whenever it is possible, a visit should be arranged to the university with the presentation of a research paper to the department. Faculty and students should be invited to provide their comments on the candidate's qualifications.

- The appointments committee must sift the results and make a recommendation, but a committee may encounter some problems in functioning well. There will always be the need for someone who will take the lead in ensuring such problems are resolved and who is strongly motivated to help the procedures function in their intended direction to produce the highest quality of appointment for the department and university.

- Finally, the senior administrative echelons of the university must take a deep interest in appointments, be satisfied that the established procedures for appointments are followed, give approval to offers of appointment and be prepared to help persuade candidates to accept.

Regarding the last step, it should be noted that in many of the best universities, the president of the university becomes involved in encouraging candidates to accept offers of appointment and in encouraging excellent professors on staff to remain with the university when they receive offers from other institutions. This involvement signals the high priority an institution places on first-rate faculty.

The general message of this section is that excellence in search processes can offset some of the difficulties an institution may face in competing in a highly competitive market for faculty. The procedures institutions will follow in making appointments will not be exactly the same and may diverge from the steps outlined here. But excellence in search processes, which require great care with each step, will pay important dividends in terms of the quality of the university.

Section Seven

SHARING THE RESPONSIBILITIES: RECOMMENDATIONS

Ontario universities face an enormous challenge and opportunity in this first decade of the 21st century to accommodate the greatly expanded number and educational needs of students, to meet the extraordinary rise in retirement-based, new enrolment-based and new research-based demand for additional faculty, and to respond to the much greater domestic and international competition for people who are highly qualified to be faculty. The size and complexity of the challenge warn against expecting simple remedies, but a decade from now there will be an accounting of whether the challenge was successfully faced and the opportunity seized rather than lost.

And, so, will there be enough excellent profs? The difficulty in giving an affirmative reply lies not in whether a sufficient number of professors can be found. It lies in whether there will be the necessary funding and the determination to seek out enough professors of a very high quality for teaching and research. A positive response will require acceptance of a shared responsibility. There is much that universities can do. There is much that governments can do. And there is much the private sector can do.

Six general recommendations, relevant to the shared responsibilities, are derived from this report. The list is deliberately short and the recommendations general to focus discussion on getting the basic directions right:

General Recommendation 1:

The enormous changes taking place in the academic labour market – especially the stronger demand conditions for faculty – are creating great opportunities and dangers. How Ontario responds will shape the future of its universities for decades to come. Universities and governments have a shared responsibility to increase public understanding of these changes and to support steps that will facilitate the recruitment and retention of first-rate faculty. In view of the seriousness of the issues and the surprising lack of solid data and analysis, there is a strong case for a significant university study centre. Whether it be a new intermediary body, an expanded component of COU, or some other institutional arrangement (involving universities, the government and private sector), its capacity for first-rate quality work with high credibility will be essential. A low-cost step will be an especially important factor in these times of severely strained university budgets.

Thus, in light of these considerations, the preferred option recommended here is a modest step at this time – an annual symposium organized around themes in issues facing the university sector. Papers, which would be placed on a web site, would be of high standard and written in a style that would be widely understood. Each symposium would include an international perspective on the theme. The symposium could meet at intervals, directly and through electronic communication, over a month or so. One person would be responsible for providing a summary

that would be placed on the web site and that would be a basis for encouraging further policy discussions. COU might wish to take the lead in co-ordinating the symposium, but it might also wish to invite other organizations to join in.

General Recommendation 2:

As Ontario universities reinvest in faculty to meet the anticipated expanded needs for undergraduate education, a strengthening of the capacity for excellent graduate studies should also be a high priority. It will be important to repair the damage to that capacity from the recent financial cut-backs that curbed support for graduate studies and that led to a loss of over 2,000 full-time faculty positions between 1990-91 and 1997-98. It will also be important to ensure that, as demands expand within and outside universities for people with postgraduate studies and research, the necessary conditions and support are available for the ablest students to undertake doctoral and postdoctoral programs.

General Recommendation 3:

Universities have a responsibility to ensure they have in place the best search processes and other policies for finding, attracting and retaining first-rate teachers and researchers. Universities have all adopted procedures for appointments that are generally accepted and consistent with equity principles. But search processes within these procedures should be characterized by great energy, enthusiasm, diligence, inclusiveness, and commitment to quality.

General Recommendation 4:

In view of the sharply rising demand for faculty in the coming years and the greater care now being taken with search processes, the case for continued restrictions on hiring in international markets has been weakened, and it is time to remove the restrictions that tend to lengthen the time needed to recruit internationally by about a year.

General Recommendation 5:

The current fundamental underfunding of the university sector in relation to competing university sectors in other jurisdictions needs to be corrected through higher general operating grants that permit improving the general environment conducive to academic work. There is a danger now that undue emphasis on targeted funding is tending to distort priorities and result in less efficient results, including the development of faculty complements. There is the further danger that the high degree of uncertainty surrounding grants creates inefficiencies in planning recruitment.

General Recommendation 6:

Universities committed to seeking the best faculty in domestic and international markets will be facing severe competition that will affect the structure and level of compensation and other support for faculty. In internal policies, as well as in public policies, a clearer recognition will be needed that, in competitive markets for faculty, exceptional quality of faculty and exceptional market forces bearing on faculty will be reflected in exceptional rewards for faculty. Without flexibility to adjust for exceptional rewards, success will be limited in drawing and retaining exceptional faculty in markets experiencing high demand.

Postscript

This report and its companion report "*How will I know if there is quality?*" were completed prior to the announcement by the Minister of Training, Colleges and Universities on March 14, 2000 of the "2000-01 University Operating Grant Allocations and 2000-01 to 2004-05 Tuition Fee Policies." That announcement does not address major problems identified in the two reports and takes a position quite different from the reinvestment in universities recently announced in other parts of the country – notably in Alberta and Quebec – and in the United States. Also the decision to tie some funding to three indicators of graduation and employment rates is worrisome in light of the problems in the use of these indicators, discussed in the companion report.

TABLE 1

SOURCES AND PROJECTIONS OF INCREASES IN UNIVERSITY ENROLMENTS OF FULL-TIME STUDENTS IN ONTARIO BETWEEN 1998-99 AND 2010-11

Sources of Change in Student Demand	Projected Enrolment Increase
Population growth of 18- to 24-year olds (growth of 190,000)	41,000
Increased participation rates	37,000
Changing workplace requirements	8,300
Compounding effect of these factors	2,600
Sub-total of projected increase	88,900
Total full-time students in 1998-99	229,500
Total full-time students projected for 2010-11	318,400

Percent increase in enrolment 38.7%

Range of uncertainty in projection for 2010-11 estimated by PWC between 295,000 and 337,000.

Source: PriceWaterhouseCoopers, *"Will there be room for me?"* March 1999.

TABLE 2

DISTRIBUTION OF REASONS FULL-TIME FACULTY LEFT THEIR POSITIONS*

	Annual Average (in percent)		
	1987-90	1993-94	1997-98
Part-time teaching or non-teaching (same institution)	4.6	10.3	4.5
Teaching or non-teaching (different institution)	23.9	22.7	15.9
Further study	0.5	1.1	0.0
Employment in government, industry or self-employment	8.5	4.3	5.0
Retired	44.8	49.8	33.4
Early retirement or incentive-based exit			37.7
Deceased	5.8	6.2	2.0
Other	11.8	5.5	1.4
Rounding adjustment	0.1	0.1	0.1
Total	100.0	100.0	100.0

* Includes faculty at Ontario universities except faculty at Laurentian, Nipissing, OISE, Western and Wilfrid Laurier, and faculty in law, veterinary medicine and health professions.

Source: Institutional responses to COU special surveys conducted for the CUPA Committee on Faculty and Staff Reporting.

TABLE 3

NEW FACULTY REQUIREMENTS FOR ONTARIO UNIVERSITIES BASED ON PROJECTIONS OF ENROLMENT AND PLANNED RETIREMENTS

Cumulative Totals from 1997-98 to 2004-05 and to 2010-11

	Cumulative Totals from 1997-98 to:	
	2004-05	2010-11
New faculty required to meet increased student demand	3,800	4,500
New faculty required to meet planned retirements	2,700	5,500
Totals	6,500	10,000

Source: PriceWaterhouseCoopers, *"Will there be room for me?"* March 1999.

TABLE 4

INTERNATIONAL PARTICIPATION RATES IN TERTIARY EDUCATION

Net enrolment in public and private tertiary education for individuals age 18-21 and 22-25 by type of tertiary education (based on head counts for 1996)

	Canada	United States in OECD Database	Mean of 25 Countries
Age 18-21			
Non-university tertiary education	17.3	12.9	5.3
University-level education	23.1	21.7	15.2
Total participation rate	40.5	34.6	23.2
Age 22-25			
Non-university tertiary education	7.3	7.4	3.1
University-level education	14.6	14.0	13.0
Total participation rate	21.9	21.5	16.9

Source: OECD Education Database.

TABLE 5A

TOTAL INTAKE INTO ONTARIO DOCTORAL PROGRAMS FULL-TIME STUDENTS, SELECTED YEARS

	Domestic Students	International Students	Total Intake
1980-81	998	305	1,303
1990-91	1,416	597	2,013
1998-99	1,407	389	1,796

TABLE 5B

DEGREES AWARDED IN ONTARIO DOCTORAL PROGRAMS SELECTED YEARS

	Domestic Students	International Students	Total Doctoral Degrees Awarded
1980	653	129	782
1990	875	158	1,033
1997	1,205	173	1,378

Data for Tables 5A and 5B include provincially assisted universities and federated and affiliated institutions and exclude law, veterinary medicine and health professions.

Source: Ontario Ministry of Training, Colleges and Universities.

TABLE 6

FULL-TIME FACULTY NEW APPOINTMENTS BY LOCATION OF PREVIOUS EMPLOYMENT/STUDY*

Annual Average (percentage distribution)	1987-90	1993-94	1997-98
Ontario	49.0	55.3	53.4
Elsewhere in Canada	25.2	20.3	25.1
United States	16.1	14.7	14.1
Europe	7.1	6.6	5.8
Other	2.6	3.1	1.6
	100.0	100.0	100.0
Annual Average (number)	1987-90	1993-94	1997-98
Number of appointments whose previous location was reported in survey	465	197	191
Number of appointments whose previous location was left unknown	43	89	200
Total appointments in survey	508	286	391

* Includes faculty at Ontario universities except faculty at Laurentian, Nipissing, OISE, Western and Wilfrid Laurier, and faculty in law, veterinary medicine and health professions.

Source: Institutional responses to COU special surveys conducted for the CUPA Committee on Faculty and Staff Reporting.

TABLE 7

FULL-TIME FACULTY LEAVERS BY LOCATION OF NEW EMPLOYMENT*

Annual Average (percentage distribution)	1987-90	1993-94	1997-98
Ontario	52.1	50.3	44.1
Elsewhere in Canada	26.0	20.0	22.5
United States	13.0	16.6	22.5
Europe	6.2	6.9	4.9
Other	2.7	6.2	6.0
	100.0	100.0	100.0
Annual Average (number)	1987-90	1993-94	1997-98
Number of faculty leavers whose location of new employment was reported in the survey	146	175	102
Number whose new employment is at the same institution or is unknown	111	73	94
Total staff in the survey	257	248	196

* Includes faculty at Ontario universities except faculty at Laurentian, Nipissing, OISE, Western and Wilfrid Laurier, and faculty in law, veterinary medicine and health professions.

Source: Institutional responses to COU special surveys conducted for the CUPA Committee on Faculty and Staff Reporting.

TABLE 8

FULL-TIME FACULTY NEW APPOINTMENTS BY TYPE OF PREVIOUS EMPLOYMENT/STUDY*

Annual Average (percentage distribution)	1987-90	1993-94	1997-98
Student (excluding postdoctoral)	22.0	12.2	12.2
Postdoctoral fellow	7.6	7.9	6.1
Full-time teaching (different institution)	40.3	32.6	50.3
Teaching (other educational institution)	3.3	3.2	4.0
Non-teaching (same or different institution)	7.4	15.7	8.8
Non-teaching (other educational institution)	0.5	6.5	2.4
Employed in government	4.3	5.0	4.0
Employed in industry	6.9	3.2	5.1
Self-employed	2.1	3.9	2.1
Other	5.7	9.7	5.1
Rounding adjustment	- 0.1	0.1	-0.1
	100.0	100.0	100.0

* Includes faculty at Ontario universities except faculty at Laurentian, Nipissing, OISE, Western and Wilfrid Laurier, and faculty in law, veterinary medicine and health professions.

The total number of full-time faculty reported in this table is the same as shown in Table 4 for "Number of appointments whose previous location was reported in survey."

Source: Institutional responses to COU special surveys conducted for the CUPA Committee on Faculty and Staff Reporting.

TABLE 9

DISTRIBUTION OF EMPLOYED EARNED DOCTORATE HOLDERS IN ONTARIO BY INDUSTRY AND SELECTED DISCIPLINES

(Based on 1996 Census)

Percentage Distribution

	Humanities & Related	Social Sci. & Related	Agric. & Biol. Sci.	Engin. & Appl. Sci.	Math & Phys. Sci.	Total of All Disciplines
University	52.7	42.5	39.5	24.5	36.7	39.5
Other Public Services	24.9	27.3	15.9	4.8	7.8	18.5
Government Services	6.2	10.6	17.5	13.4	13.3	11.3
Business Management	5.5	10.2	7.4	24.9	19.2	13.3
Manufacturing	2.1	1.5	7.4	16.9	12.1	7.0
Private Sector	8.4	7.8	12.5	15.4	10.9	10.4
Total	100.0	100.0	100.0	100.0	100.0	100.0
Total Number	4,690	7,855	3,115	4,390	7,380	

Number of Employed Earned Doctorate Holders in Ontario in All Disciplines (1996): 29,800

Number of Employed Earned Doctorate Holders in Above Disciplines (1996): 27,630

Notes: Columns may not add due to Statistics Canada random rounding and suppression. The total column includes data from all discipline categories, including health professions, education, and fine and applied arts.

Source: Statistics Canada. *Census of Canada, 1996.* (special tabulation)

TABLE 10

AVERAGE EMPLOYMENT INCOME OF FULL-TIME EARNED DOCTORATE HOLDERS IN ONTARIO BY INDUSTRY AND SELECTED DISCIPLINES

(Based on 1996 Census)

In Dollars

	Humanities & Related	Social Sci. & Related	Agric. & Biol. Sci.	Engin. & Appl. Sci.	Math & Phys. Sci.	Total of All Disciplines
University	71,010	78,613	65,804	73,010	68,692	71,956
Other Public Services	50,543	68,692	57,929	68,291	60,480	73,146
Government Services	63,802	67,719	66,687	67,184	67,905	67,351
Business Management	60,629	76,171	66,469	69,053	67,438	68,863
Manufacturing	49,911	130,881	75,912	73,007	72,595	76,765
Private Sector	72,658	102,119	55,317	65,202	73,356	76,278
Total	65,071	77,344	64,249	72,741	68,730	72,028

Note: The total column shows average income over all discipline categories, including health professions, education, and fine and applied arts.

Source: Statistics Canada. *Census of Canada, 1996.* (special tabulation)